

Notice of Allowability

Application No.

10/800,099

Examiner

Elizabeth D. Wood

Applicant(s)

HARRIS ET AL.

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment and terminal disclaimer filed 5/31/05.
2. ☒ The allowed claim(s) is/are 1-13, 15-17, 19-21, 23-36.
3. ☒ The drawings filed on 12 March 2004 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date 06102005.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

Election/Restriction

The cancellation of the non-elected claims is hereby acknowledged.

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Ms. Sarita Kelley on June 10, 2005.

The application has been amended as follows:

Replace all claims with the following listing:

Listing of Claims:

- Claim 1 (Original) A catalyst having a macropore structure comprising mordenite zeolite having a silica to alumina molar ratio in the range of about 50:1 to about 105:1 and wherein the peak macropore diameter of the catalyst, measured by ASTM Test No. D 4284-03, is less than about 900 angstroms and the cumulative pore volume of the catalyst at pore diameters less than or equal to about 500 angstroms, measured by ASTM Test No. D 4284-03, is less than or equal to about 0.30 milliliters per gram.
- Claim 2 (Original) The catalyst of claim 1 wherein the cumulative pore volume at pore diameters less than or equal to about 400 angstroms is less than or equal to about 0.30 milliliters per gram.
- Claim 3 (Original) The catalyst of claim 2 wherein the cumulative pore volume at pore diameters less than or equal to about 300 angstroms is less than or equal to about 0.25 milliliters per gram.
- Claim 4 (Currently amended) The catalyst of claim 3 wherein the cumulative pore volume at pore diameters less than or equal to about 300 angstroms is less than ~~to~~ or equal to about 0.20 milliliters per gram.

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- Claim 5 (Original) The catalyst of claim 4 wherein the cumulative pore volume of the catalyst at pore diameters less than or equal to about 400 angstroms is in the range of about 0.05 milliliters per gram to about 0.18 milliliters per gram.
- Claim 6 (Original) The catalyst of claim 5 wherein the cumulative pore volume of the catalyst at pore diameters less than or equal to about 300 angstroms is in the range of about 0.08 milliliters per gram to about 0.16 milliliters per gram.
- Claim 7 (Original) The catalyst of claim 1 wherein the peak macropore diameter is in the range of about 400 angstroms to about 800 angstroms.
- Claim 8 (Original) The catalyst of claim 7 wherein the peak macropore diameter is in the range of about 400 angstroms to about 700 angstroms.
- Claim 9 (Original) The catalyst of claim 8 wherein the peak macropore diameter of the catalyst is in the range of about 450 angstroms to about 600 angstroms.
- Claim 10 (Original) The catalyst of claim 1 wherein the mordenite zeolite has a silica to alumina molar ratio of about 65:1 to about 95:1.
- Claim 11 (Original) The catalyst of claim 10 wherein the mordenite zeolite has a silica to alumina molar ratio of about 75:1 to about 90:1.
- Claim 12 (Original) The catalyst of claim 1 wherein the catalyst is in the form of a tablet.

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Claim 13 (Original) A catalyst composite comprising:

(a) the catalyst of claim 1; and

(b) a binder.

Claim 14 (Cancelled)

Claim 15 (Currently amended) The catalyst composite of claim 14 wherein the binder is alumina.

Claim 16 (Original) The catalyst composite of claim 13 wherein the mordenite zeolite is present in the range of about 50 weight percent to about 99 weight percent based on the total dry weight of the catalyst composite.

Claim 17 (Original) The catalyst composite of claim 16 wherein the mordenite zeolite is present in the range of about 60 weight percent to about 90 weight percent based on the total dry weight of the catalyst composite.

Claim 18 (Cancelled)

Claim 19 (Previously amended) A process for preparing a catalyst composite wherein the peak macropore diameter of the catalyst, measured by ASTM Test No. D 4284-03, is less than about 900 angstroms and the cumulative pore volume of the catalyst at pore diameters less than or equal to about 500 angstroms, measured by ASTM Test No. D 4284-03, is less than or equal to about 0.30 milliliters per gram, comprising:

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- (a) contacting a mordenite zeolite having a silica to alumina molar ratio in the range of about 50:1 to about 105:1 with a binder in the presence of volatiles to form a mixture wherein the weight percent of mordenite zeolite is in the range of about 50 to about 99 based on the total dry weight of the resulting catalyst composite, and wherein the volatiles in the mixture are in the range of about 30 weight percent to about 70 weight percent of the mixture;
- (b) shaping the mixture to form a composite;
- (c) drying the composite; and
- (d) calcining the composite in a substantially dry environment.

Claim 20 (Original) The process of claim 19 wherein in step (b) shaping comprises extruding.

Claim 21 (Original) The process of claim 19 wherein in step (a) the weight percent of mordenite zeolite is in the range of about 60 to about 90 based on the total weight of the mixture.

Claim 22 (Cancelled)

Claim 23 (Currently amended) The process of claim ~~22~~19 wherein the binder is alumina.

Claim 24 (Original) The process of claim 19 wherein in step (a) the volatiles in the mixture are present in the range of about 35 weight percent to about 50 weight percent of the mixture.

Claim 25 (Original) The process of claim 24 wherein the volatiles
comprise water and an acid.

Claim 26 (Original) A catalyst composite prepared by the process of claim
19.

Claim 27-48 (cancelled)

Response to Amendment

The amendment filed May 31, 2005 and the foregoing examiner's amendment have obviated the rejections under 35USC 112.

The terminal disclaimer filed May 31, 2005 is proper and has been recorded. Accordingly, the obviousness-type double patenting rejection over copending application No. 10/799,907 is hereby withdrawn.

The following is an examiner's statement of reasons for allowance:

The prior art of record, either alone or in combination, fails to anticipate or render obvious the herein claimed catalyst composition and method for the production thereof, wherein the catalyst comprises mordent having a macropore structure, wherein the Si:Al ratio is from about 50:1 to about 105:1, wherein the peak macropore diameter is less than about 900 angstroms and the cumulative pore volume of the catalyst at pore diameters less than or equal to about 500 angstroms is less than or equal to about 0.30 milliliters per gram.

The closest prior art, for example US 4,123,390 to Sherman et al. or US 5,118,896 to Steigelmann et al., discloses zeolites having characteristics from which possibly one could pick and choose to obtain characteristics overlapping those claimed herein. However, it is clear from the specification that applicant considers the claimed pore structure limitations to be critical to the operation of the catalyst and in fact both states and demonstrates that by employing this particular set of parameters, a catalyst is obtained that exhibits reduced deactivation rates during alkylation processes.

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Accordingly, the preponderance of the evidence on this record supports the non-obviousness of the instantly claimed invention.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elizabeth D. Wood whose telephone number is 571-272-1377. The examiner can normally be reached on M-F, 5:30-2:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on 571-272-1233. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Elizabeth D. Wood
Primary Examiner
Art Unit 1755

edw